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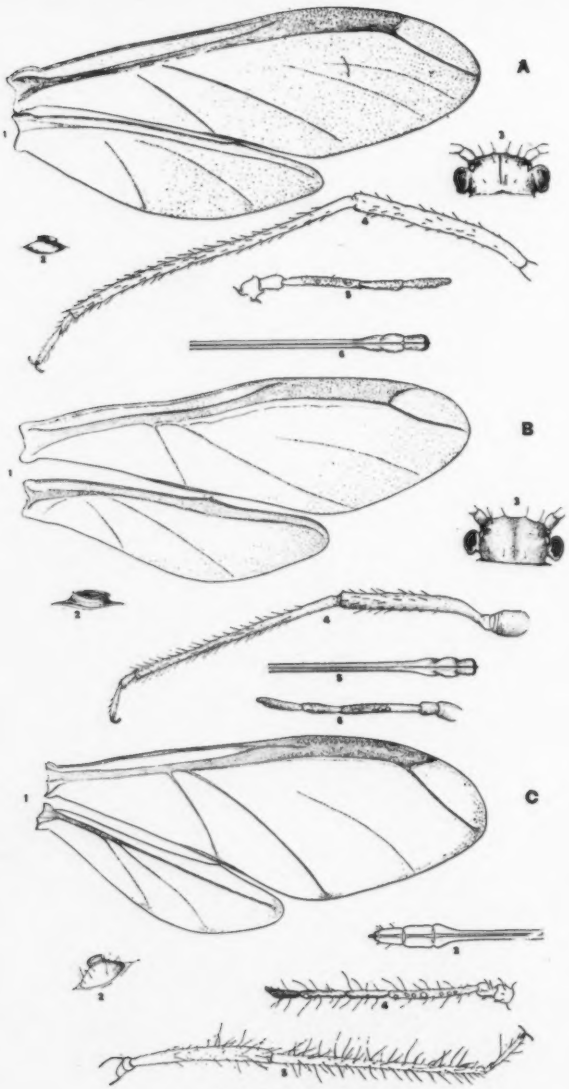

LACHNIDS—WILSON.

A, ESSIGELLA CALIFORNICA; B, E. PINI; C, UNILACHNUS PARVUS.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXX. JANUARY, 1919. NO. 1.

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Three new Lachnids with Comparative Notes on three others (Homop.).

By H. F. WILSON, University of Wisconsin.*

(Plates I and II.)

Essigella californica (Essig). (Plate I, A, figs. 1-6.)

Description made from specimens collected on *Pseudotsuga douglassi* at Corvallis, and on *Pinus ponderosa?* at Grants Pass, Oregon, and from specimens sent to me by E. O. Essig, from California. They occur on the needles and are hidden by the sheath so that close observation is necessary to find them.

Apterous viviparous female. General color, a pale yellowish green to brownish yellow with a row of small brown dots on each body segment. A short sharp spine arises from each spot. Antennae and legs dusky brown. The body is elongate with the head and thorax quadrangular and the abdomen ovoid and ending in a sharp pointed cauda. The antennae are five-segmented and reach almost to the second pair of coxae. The third segment usually does not have sensoria, but in

*The drawings used in this paper were made by Mrs. Margaret Nehrlich Pickett, since deceased.

some specimens one or two may be present. The fourth segment has one large, and the fifth one large and several small sensoria. The rostrum reaches slightly beyond the third pair of coxae and has a very distinctive structure. Plate I, A, fig. 6. The third and fourth segments are quadrangular, while the fifth is but a small half moon-shaped piece closely attached to the fourth segment. The nectaries have a very small, narrow, cone-shaped base. The cauda is triangular and ends in a nipple-like projection. The legs and front part of the head are set with prominent long spline-like hairs. Length of body 2.2 mm.

Alate viviparous female. General color the same as in the apterous forms, except that the thoracic shield is deep brown and the head and prothorax are dusky brown. The body is elongate and slender, and the general shape and size of the antennae, beak, abdomen, nectaries and cauda are like those of the apterous forms, except the antennal sensoria on the third segment and the legs, which are longer and more slender in this form. The third antennal segment has two or three large circular sensoria, usually widely separated. The wings are long and slender, with the median vein once forked. The base of the fork is very indistinct and in some specimens cannot be distinguished. Each branch becomes more distinct towards the distal part.

Measurements. Length of body, 2.5 mm. Length of antennal segments, III, 0.187 mm.; IV, 0.1 mm.; V, 0.145 mm.; total length, 0.62 mm. Length of wing, 2.78 mm. Length of hind tibia, 1.34 mm.; hind tarsus, 0.1 mm. and 0.187 mm. Length of beak, 0.92 mm.

Essigella pini new species. (Plate I, B, figs. 1-6).

Description made from specimens collected on *Pinus virginiana,* by W. L. McAtee, at Plummers Island, Maryland, June 27 and 28, 1914. This species resembles very closely *Essigella californica* Essig, described from California, but several distinct differences are easily found. The main difference is found in the length and shape of the hind tibiae and the wings. The hind tibiae of *E. pini* are short and stout while those of *E. californica* are longer and slender. The wing of the former species normally has but a simple median vein, while the latter has normally two or more or less connected branches. Specimens in balsam. *Types* in writer's collection.

Apterous viviparous female. .General color a light yellowish green, with a series of rows of small brown spots on the abdomen. The fore part of the body is quadrangular, while the abdomen tapers to a point. The antennae are five-segmented and of a peculiar shape, as shown in the accompanying drawing. The rostrum of this species and of *E. californica* are also quite distinct and are unlike that of any other

known species. The nectaries are small and without the large cone-shaped base found in most species of Lachnids. Length of body, 1.5 mm.

Alate viviparous female. The antennae are five-segmented, as shown in Plate I, B, fig. 6. General color, yellowish green, the thorax being brownish (?). The abdomen is marked with a series of brown spots which occur in longitudinal rows. The antennae are short and have five segments; distal half of the third and the fourth and fifth segments brown. The fifth segment is longer than the fourth, and the fourth and fifth together are slightly longer than the third; third segment with three and sometimes four roundish sensoria; fourth with one large one at the distal end, and the fifth with one large and several small ones near the tip. The head is set with coarse spines, six of which are set in front. Similar spines are found on the body. The antennae have a few inconspicuous spines widely set apart. The legs are distinctly spiny, but not as much so as in *Essigella californica.* The rostrum is short with the third and fourth segments quadrangular and the terminal segment half moon-shaped and not acutely pointed as in other species of *Lachninae.* Wings long and narrow, front wing usually with the median vein simple. The tibiae are short and rather stout, while in *E. californica* they are longer and more slender. The nectaries are but openings with thickened edges. The cauda is angular with the tip elongated into a sharp nipple-like projection.

Measurements. Length of body, 1.55 mm. Length of antennal segments, III, 0.21 mm.; IV, 0.1 mm.; V, 0.145 mm. Total length, 0.6 mm. Length of wing, 2.33 mm.; width, 0.9 mm. Length of beak, 0.64 mm. Length of hind tibia, 0.85 mm.; hind tarsus, 0.1 mm. and 0.145 mm.

Eulachnus thunbergii new species. (Plate II, D, figs. 1-8.)

Descriptions made from one male and six oviparous females mounted on slides in balsam. This material was secured for study through the kindness of Dr. L. O. Howard and Mr. A. C. Baker, of the United States Bureau of Entomology.

Original notes made by Mr. Theo. Pergande are as follows, "Pergande acc. 12127." "March, 1906. Received from Dr. I. S. Kuwana, of the Imperial Agricultural Experiment Station, Hishigahara, Tokio, Japan, alcoholic specimens of a Lachnid, marked 267, with the following note: On the twigs of *Sciadopytis verticillata* and *Pinus thunbergii* Parl. Tabata, Tokio, Nov. 25, 1905, winged form; II, head and antennae black, eyes red, Prothorax dark yellowish green, dorsal aspect of meso-metathorax, black; abdomen yellowish green. Honey tubes black; wingless form II, body yellowish green. long and narrow; head black; eyes reddish purple. Antennae dark yel-

low, but the tips black; honey tubes black. Mounted them in balsam. This appears to be a new species, near *L. agilis* Kaltenbach."

I have not seen specimens of *Eulachnus agilis* Kaltenbach which may or may not be the same as *Eulachnus rileyi* Williams, but I find this species to be distinctly different from Williams' species. *Types* in U. S. Bureau of Entomology collection.

The main differences are shown in the following comparisons between the two.

Oviparous Female	*Eulachnus rileyi*	*Eulachnus thunbergii*
Hairs	Coarse, spinelike	Fine, semi-setaceous
Antenna	1.22 mm. long	1.02 mm. long
Hind Tibia	1.78 mm. long	1.11 mm. long
Alate male	*Eulachnus rileyi*	*Eulachnus thunbergii*
Antenna	2 mm. long	1.53 mm. long
Hind Tibia	2.05 mm. long	1.33 mm. long
Sensoria	Numerous, small	Numerous, larger than in *E. rileyi*

Apterous oviparous female. Specimens in balsam appear to have about the same color and characteristics as *E. rileyi*? Color grayish brown. Antennae and legs dusky brown. Body elongate and furnished with long semi-spinelike hairs. Similar hairs occur on the antennae and legs. Beak short and extending to the hind coxae. The last segment is a narrow black piece without length and is hardly separated from the preceding segment. Antennae reaching slightly beyond the base of the hind coxae. Third antennal segment approximately as long as the fourth and fifth. The fifth slightly longer than fourth or sixth, the latter two being about equal. The fourth and fifth segments each bear a single sensorium near the distal end. Cornicles with the base hardly more than a millimeter in depth. Cauda short and broadly rounded. Hind tibia somewhat stout and with numerous small sensoria along the basal two-thirds.

Measurements. Length of body, 2.34 mm. Length of antennal segments, III, 0.378 mm.; IV, 0.16 mm.; V, 0.2 mm.; VI, 0.16 mm. Total length, 1.53 mm. Length of hind tibia, 1.11 mm.

Alate Male. General color, head and thorax black. Antennae and legs, except the middle parts of the first and second tibiae, deep brown. Genital plates dusky black. Cauda light colored. Hairs on antennae, legs and body as in the apterous forms. Body long and slender, antennae reaching beyond the hind coxae.

Antennae coarse and with numerous circular sensoria of irregular size. The fourth and fifth segments are about equal in length and are shorter than the third and longer than the sixth.

Nectaries as in the apterous forms. Wings long and narrow with median vein having but a single fork. Angle between branches wider and shorter than in *Eulachnus rileyi.*

Mesurements. Length of body a little more than 2 mm. Length of antennal segments not definite because of a deformity in the only available specimen. III, 0.56 mm.; IV, 0.34 mm.; V, 0.34 mm.; VI, 0.26 mm. Length of hind tibia, 1.33 mm.

Eulachnus rileyi Williams. (Plate II, E, figs. 1-6.)

Description made from specimens sent to me by J. J. Davis, and from specimens collected at St. Louis, Missouri; Chicago, Illinois, and Madison, Wisconsin.

Apterous viviparous female. General color, orange brown to greenish black; the color is caused to vary more or less by a grayish pulverulence covering the body. When placed in balsam four rows of black spots are visible on the body, and from each one there arises a long spine-like hair. Antennae light at the base and shading to black at the tip. Antennae long and slender and quite spiny. The third segment is not quite as long as four and five together, segments four and six approximately equal. The rostrum is short, not quite reaching the hind coxae. The nectaries are small with a narrow cone-shaped base. Entire body covered with long spine-like hairs.

Length of body, 2.4 mm. Length of antennal segments, III, 0.45 mm.; IV, 0.24 mm.; V. 0.31 mm.; VI, 0.24 mm. Total length, 1.4 mm. Length of hind tibia, 1.6 mm.; hind tarsi, 0.12 mmm. and .22 mm.

Alate viviparous female. General color dark green or brown, covered with white waxy powder or threads. When mounted in balsam the head and thorax are brownish and the abdomen greenish brown. Antennae and hind pair of legs black, the tibia of the front pair of legs light colored except at the ends of the segment. Antennae long and slender and set with long black spine-like hairs. The third segment without sensoria, fourth and fifth with one each. Other characters as in apterous form.

Measurements. Length of body 2 mm. Length of antennal segments, III, 0.44 mm.; IV, 0.25 mm.; V, 0.26 mm.; VI, 0.19 mm. Total length, 1.3 mm. Length of hind tibia, 1.6 mm. Length of hind tarsus, 0.12 mm. and .22 mm.

UNILACHNUS new genus.

The characters upon which this genus is based are the unbranched median vein and blunt terminal segment of the ros-

trum. In the true genus *Lachnus* the terminal segment is long and tapering.

Type of genus *Lachnus parvus* Wilson.

Unilachnus parvus (Wilson). (Plate I, C, figs. 1-5).

This species is included in this paper to illustrate the genus and also to show the distinction between this and other species which have a simple or once forked median vein. A complete description will be found in Volume 41 of the Transactions of the American Entomological Society, 1915, p. 104. It occurs on the needles of *Pinus virginiana* and *P. rigida* and the type locality is the District of Columbia.

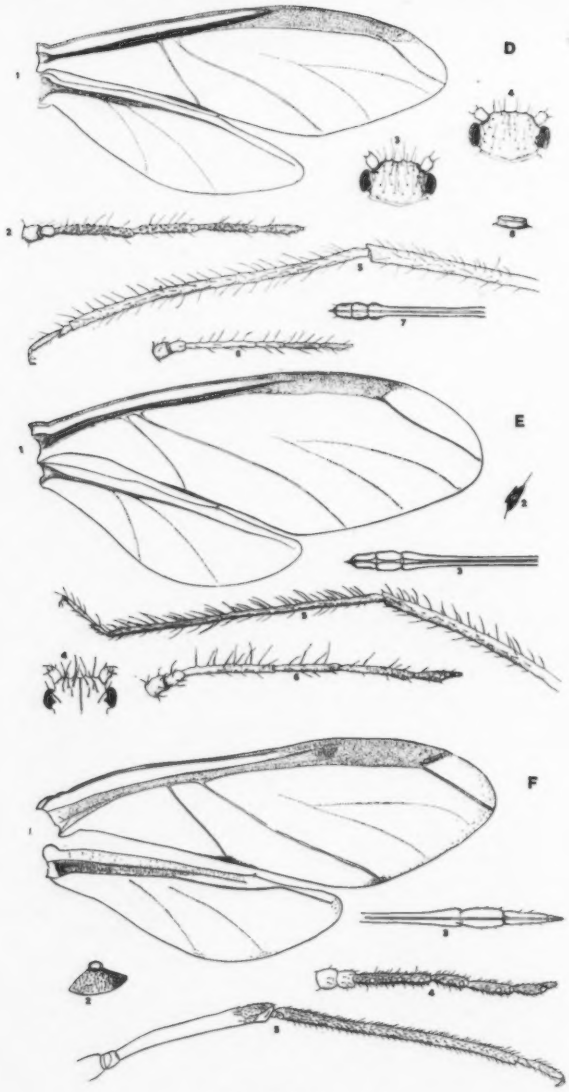
Alate viviparous female. Body elongate and slender, antennae and legs medium slender and thickly covered with long slender hairs. Antennae reaching to the third pair of coxae and the beak reaching to the second pair; beak broad and blunt at the tip. The third antennal segment bears about eight small sensoria, the fourth two and the fifth a single large one near the distal end; sixth with the usual large one near the base of the antennal spur. Wings hyaline and the median vein but a very indistinct single piece as indicated in the accompanying figure. Nectaries small and more or less bell-shaped. The opening rather large for the base. Cauda bluntly angled.

Measurements. Length of body, 1.48 mm.; width, 0.6 mm. Length of antennal segments, III, 0.32 mm.; IV, 0.154 mm.; V, 0.176 mm.; VI, 0.154 mm. Length of wing, 2.5 mm. Length of hind tibia, 0.92 mm. Length of hind tarsus, 0.066 mm. and 0.3 mm. Length of beak, 0.49 mm.

Lachnus juniperivora new species. (Plate II, F, figs. 1-5.)

From material collected by W. L. McAtee on Plummers Island, Maryland, July 5, 1914, on *Juniperinus virginiana*. *Types* in writer's collection.

Alate viviparous female. Specimens in balsam show no distinct coloration of antennae and legs, these parts appearing to be light dusky throughout. Third antennal segment approximately equal in length to the fourth and fifth segments, fourth segment shorter than the fifth, fifth and sixth about equal. Third segment with about six round sensoria of irregular size and not in alignment; fourth segment with two and fifth with two. Beak extending to the tip of the abdomen. The antennae are quite distinct from those of the other species in this genus and the nectaries are much broader at the base than those of *Lachnus tomentosus*. The wing venation is shown in Plate II, F, fig. 1. Nectaries with a wide sloping base. Cauda rounded, anal plate



LACHNIDS—WILSON.

D, EULACHNUS THUNBERGII; E, EU. RILEYI; F, LACHNUS JUNIPERIVORA.

angular. Antennae, legs and body with a moderate number of short medium hairs.

Measurements. Length of body, 1.8 mm. Length of antennal segments, III, 0.37 mm.; IV, 0.166 mm.; V, 0.187 mm.; VI, 0.187 mm. Total length, 1.02 mm. Beak, III, 0.21 mm.; IV, 0.21 mm.; V, 0.07 mm. Total length, 1.82 mm. Length of hind tibia, 1.36 mm.; hind tarsus, 0.083 mm. and 0.21 mm.

EXPLANATION OF PLATES I AND II.

PLATE I.—A. *Essigella californica,* alate viviparous female; 1. wings; 2. cornicle; 3. head; 4. hind leg; 5. antenna; 6. rostrum.

B. *Essigella pini,* n. sp., alate viviparous female; 1, wings; 2. cornicle; 3. head; 4. hind leg; 5. rostrum; 6. antenna.

C. *Unilachnus parvus,* alate viviparous female; 1. wings; 2. cornicle; 3. rostrum; 4. antenna; 5. hind leg.

PLATE II.—D. *Eulachnus thunbergii,* n. sp., 1. wing of male; 2. antenna of male; 3. head of male; 4. head of oviparous female; 5. leg of oviparous female; 6. antenna of oviparous female; 7. rostrum of male; 8. cornicle.

E. *Eulachnus rileyi,* alate viviparous female; 1. wings; 2. cornicle; 3. rostrum; 4. head; 5. hind leg; 6. antenna.

F. *Lachnus juniperivora,* n. sp., alate viviparous female; 1. wings; 2. cornicle; 3. rostrum; 4. antenna; 5. hind leg.

On an Undescribed Species of Medeterus (Diptera, Dolichopodidae).

J. R. MALLOCH, Urbana, Illinois.

In the June number of Entomological News for 1918 (p. 216) Mr. W. Marchand described the larva and pupa of *Argyra albicans* Loew, at the same time making some pertinent comments on the paucity of our knowledge of the life-history of the members of this family, and a suggestion that the "cyclorrhaphous" form of opening in the evacuated cocoon might indicate evolutionary relationships. Unfortunately the latter contention cannot be maintained by an examination of the facts. The cyclorrhaphous exit is produced by orthorrhaphous insects through a turning movement of the body, causing a cutting off of the cap of the cocoon through the abrasion by the sharp cephalic thorns of the material composing the cocoon. In Cyclorrhapha the ecdysis is facilitated by the expansion of the ptilinum on the

head of the enclosed imago, which presses against the cephalic extremity of the puparium, causing a rupture to take place along lines, or pseudosutures, previously existent. As a matter of fact the similarity between the cap-like lid left on the empty cocoon of species in Orthorrhapha and that of the other suborder on the puparium, which is merely the larval skin, is more imaginary than real, as the cap in the latter consists of at least 2, and often 4, distinct pieces. The cocoon of Orthorrhapha and the puparium of Cyclorrhapha are not identical in character, the former having no physiological relation to the insect, and to show evolutionary relationships it is essential that the same physiological features be compared.

In this paper I describe a new species of the genus *Medeterus*. Unfortunately no larvae were preserved as the specimens were merely side-products of another experiment. I have already recorded the fact that the imagines of one species at least of this genus in North America are predaceous. The larvae have the same habit.

Medeterus caerulescens sp. n.

♂ and ♀.—Metallic blue; frons, center of face, thorax and abdomen distinctly gray pruinescent. Antennae, palpi and proboscis black. Face deep blue, becoming violet-colored below antennae. Dorsum of thorax not distinctly vittate, the pruinescence most distinct in center anteriorly; pleura brighter blue than dorsum, especially below. Abdomen with a blue-green tinge; processes of hypopygium yellowish. Legs black, extreme apices of femora and bases of tibiae and basal half of midmetatarsus yellow. Wings clear, veins black, paler at bases. Postocular cilia white; bristle above fore coxa black; tegular cilia black. Halteres yellow.

♂.—Third antennal joint higher than long, with a slight indentation at insertion of arista, the latter very long, almost bare; face of equal width on its entire length; palpi with a few hairs. Dorsum of thorax with 2 rows of acrostichals on anterior half; scutellum with 2 strong apical and 2 weaker sub-basal bristles; propleural bristle short. Hypopygium long, reaching almost to base of venter, the processes slender. Fore tibia without bristles; mid tibia with the usual 2 bristles; basal joint of mid-tarsus nearly as long as joints 2 to 5 combined, the entire tarsus slightly longer than tibia; hind tibia rather thick, with weak hairs, which are most distinct on apical half of posterior surface, no

bristles present; basal joint of hind tarsus slightly over one-half as long as second, the latter about as long as joints 3 to 5 combined, the entire tarsus slightly longer than the tibia. Veins 3 and 4 convergent apically; outer cross-vein at about 1.5 its own length from apex of fifth vein.

♀.—Similar to the male in chaetotaxy; genitalia very slender. Length, 2.5 to 3 mm.

Type and *allotype*, White Heath, Illinois, April 19, 1918; larvae under bark of fallen cottonwood tree; imagines emerged April 26, 1918.

Closely resembles *maurus* Wheeler, but has black tegular cilia and differs in other respects.

The larva makes a cocoon similar to that of *Drapetis* but not so tough. The pupa is white, distinctly shining, with the cephalic thorns dark brown. The following notes indicate distinctions between this species and *Argyra albicans* Loew as described by Marchand.

The thoracic respiratory organs are more slender, the cephalic thorns are closely contiguous, with 2 long hairs at their bases above and 2 slight elevations ventrad of them, on each of which there is a long hair. The two protuberances referred to as converging bristles above the mouth-parts by Marchand are the apices of what I take to be the aristae, which are straight in *Medeterus*, the remainder of the antennae being clearly traceable to the bases of the cephalic tubercles. The wing-pads are longer in *Medeterus* than shown by Marchand, extending to base of third segment of abdomen; the position of the legs is similar in both species. The abdomen differs from that of *albicans* in having a series of long, sharply pointed, dense, appressed bristles on apices of segments 1 to 8 inclusive. In other respects the species are similar, except that *caerulescens* is only 3 mm. in length.

Imagines of *Medeterus* are nearly always found on the trunks of trees or on exposed vertical surfaces close to trees, while those of *Argyra* are found either on low vegetation or on bare sand close to streams. Both genera are common to Europe and North America.

The Odonata of Concord, Massachusetts.

By R. Heber Howe, Jr., Concord, Mass.

In Thoreau's "Summer" the following entries comprise the first records of dragon-flies for the township of Concord: "June 6, 1852.—First devil's needles in the air, and some bright green ones on flowers." "June 6, 1854.—I see some devil's needles, a brilliant green with white or black, or open work and black wings [*Libellula*?], some with clear black wings [*A. maculatum*?] some with white bodies and black wings, etc." [*P. lydia*?]. "June 10, 1857.—Many creatures, devil's needles, etc., cast their sloughs now." "June 14, 1853. p. m. To White's Pond—Large devil's needles [*Basiaeschna*?] are buzzing back and forth. They skim along the edge of the blue flags, apparently quite around this cove or further, like Hen Harries beating the bush for game." The first specific species recorded from Concord was *Celithemis elisa* listed by Dr. P. P. Calvert in Occasional Papers, Boston Society of Natural History, VII. Fauna of New England, 41, 1905, based on a specimen in the Academy of Natural Sciences of Philadelphia. The first list of local dragon flies was published by Edward L. Peirson, Jr., in the Proceedings of the Thoreau Museum of Natural History I:41, 1915, and numbered twelve species. The second, and a preliminary list was published by R. Heber Howe, Jr., in Psyche 23:12-15, 1916. This list contained fifty-two species. In a Manual of New England Odonata Memoir II, Part I, II & III March 1917-August 1917, July, 1918, 1-32, Thoreau Museum of Natural History, various Concord records appeared. The present list, probably nearly complete, numbers eighty-seven species. A complete collection of specimens on which these records are based is to be found in the Thoreau Museum of Natural History, Concord.

ZYGOPTERA.

Agrionidae.

Agrion aequabile (Say). Uncommon; Spencer brook, May 29 to June 24.

Agrion maculatum Beauv. Common; Spencer brook, Fairyland, May 20 to August 26.

COENAGRIONIDAE.

Lestes congener Hagen. Uncommon; Willow pond (Carlisle) and adjacent ponds, August 19 to October 9.

Lestes disjunctus Selys. Rare; Willow pond region, August 14 to September 18.

Lestes eurinus Say. Rare; upper Spencer brook valley, Flaxdam pond (Wayland), June 5 to July 20.

Lestes forcipatus Ramb. Rather uncommon; Willow pond region, August 13 to September 7.

Lestes rectangularis Say. Uncommon; June 21 to September 18.

Lestes uncatus Kirby. Common; John Brown farm ponds, May 30 to June 27.

Lestes unguiculatus Hagen. Very common; ponds, brooks, etc., August 9 to September 5.

Lestes vigilax Hagen. Rather uncommon; Bateman's, Willow pond region, Sudbury river, August 5 to September 5.

Argia moesta (Hagen). Rare; Walden pond, June 16 to August 20.

Argia violacea (Hagen). Common; Fairhaven bay, Willow, Bateman's, Walden ponds, May to September 10.

Argia sedula (Hagen). Two tenerals taken on June 24, 1916, were of doubtful determination by Mr. E. B. Williamson.

Enallagma aspersum (Hagen). Rare; Willow, Bateman's, Goose ponds, August 13 to September 5.

Enallagma calverti Morse. Not uncommon; Fairhaven bay, Goose ponds, Spencer brook, May 19 to June 15.

Enallagma civile (Hagen). Common; river and ponds, May to September 10.

Enallagma ebrium (Hagen). Common; Fairyland, Willow, Bateman's ponds, May 26 to August 30.

Enallagma geminatum Kell. Common; Bateman's pond, July 20 to October 2. Taken by Mr. L. W. Swett in Bedford.

Enallagma hageni (Walsh). Rare; Spencer brook, June 8. Taken by Mr. L. W. Swett in Bedford.

Enallagma laterale Morse. Common; Bateman's pond, May to July 7.

Enallagma divagans Selys. Rare; Walden pond, June 19. Taken by Mr. Swett in Bedford.

Enallagma pollutum (Hagen). Common; Bateman's pond, June 23 to September 10. Taken by Mr. Swett in Bedford.

Enallagma signatum (Hagen). Common; Concord river, Bateman's pond, May 26 to September 5.

Enallagma traviatum Selys. Rather rare; Bateman's pond, August 1 to 20.

Nehalennia irene (Hagen). Rare; Willow, Strawberry Hill, Walden ponds, June 8 to September 7.

Chromagrion conditum (Hagen). Uncommon; Fairyland, Bateman's, Walden ponds, June 4 to 23.

Ischnura posita (Hagen). Very rare; June 16 to September 3.

Ischnura verticalis (Say). Common; Willow and Goose ponds, May 29 to October 9.

Anomalagrion hastatum (Say). Rare; Goose, Strawberry Hill and Willow ponds, August 13 to 19.

ANISOPTERA.

Aeshnidae.

Cordulegaster diastatops (Selys). Uncommon; Bateman's, John Brown farm brooks, May 28 to June 18.

Cordulegaster maculatus Selys. Uncommon; Spencer, John Brown farm brook, June 8 to 28.

Hagenius brevistylus Selys. Rare; Walden, Bateman's, Willow ponds, August 16 to September 3.

Ophiogomphus aspersus Morse. Rare; Bateman's pond, Spencer brook, May 26 to June 11.

Gomphus borealis Needh. One female, Bateman's pond, May, 1915, collected by Peirson.

Gomphus exilis Selys. Common; Bateman's, Walden ponds, Spencer brook, May 30 to August 8.

Gomphus spicatus Hagen. Common; Bateman's, Walden ponds, May 13 to June 23.

Gomphus spiniceps (Walsh). One specimen recorded by Peirson.

Gomphus furcifer Hagen. Rare; Strawberry Hill pond, June 9 to 11. Taken by Dr. N. Banks at Lexington, June, 1917.

Dromogomphus spinosus Selys. Uncommon; Bateman's, Willow ponds, July to September 8.

Boyeria vinosa (Say). Uncommon; Spencer brook, John Brown farm brook, August 23 to September 15.

Basiaeschna janata (Say). Common; Spencer brook, Bateman's, Walden ponds, May 17 to June 24.

Gomphaeschna furcillata (Say). Rare; Bateman's pond, June 7-8. Recorded by Peirson in May.

Anax junius (Drury). Common; Goose, John Brown farm, Bateman's, Willow ponds, May 18 to September 19.

Aeshna canadensis Walk. Common; Bateman's, Willow ponds, August 8 to September 27.

Aeshna clepsydra Say. Common; Concord river, Willow pond, August 19 to October 9.

Aeshna constricta Say. Uncommon; Willow, Bateman's ponds. August 19 to September 26.

Aeshna eremita Scud. Concord, October 1.

Aeshna tuberculifera Walk. Rare; Strawberry Hill pond, August 11 to September 6.

Aeshna umbrosa Walk. Common; August 15 to October 26.
Aeshna verticalis Hagen. Common; August 15 to October 2.
Epiaeschna heros (Fabr.). Rare; Bateman's pond, June 7. Recorded by Peirson in May.

LIBELLULIDAE.

Didymops transversa (Say). Common; Bateman's, Willow, Walden ponds, May 17 to June 23.
Epicordulia princeps (Hagen). Common; Bateman's pond, May 25 to August 29.
Helocordulia uhleri (Selys). Rare; Willow, Bateman's pond, Spencer brook, May 17 to June 18.
Tetragoneuria cynosura (Say). Abundant; May 3 to June 26.
Tetragoneuria cynosura var. **simulans** Mutt. Uncommon; Bateman's pond, May 28 to June 23.
Tetragoneuria morio Mutt. Rare; Bateman's pond, May 26 to 29.
Tetragoneuria spinigera Selys. Uncommon; Bateman's pond, May 19 to June 18.
Dorocordulia libera (Selys). Rare; Bateman's pond, June 8-9.
Dorocordulia lepida (Hagen). Rare; Bateman's pond, August 9 to 13.
Williamsonia lintneri (Hagen). Rare; Bateman's and Willow pond, May 16 to June 1. Recorded by Peirson.
Cordulia shurtleffi Scud. Rare; Bateman's pond, June 9-27, and Flaxdam pond, Wayland.
Somatochlora kennedyi E. M. Walker. Common; Bateman's pond, upper Spencer brook, June 3 to 24.
Somatochlora tenebrosa (Say). Rare; Bateman's pond, September 8.
Somatochlora walshii (Scudder). Rare; a male found floating on the Assabet River on September 15, 1918, by H. M. Keyes.
Libellula cyanea Fabr. Uncommon; Willow and Bateman's pond, June 4 to September 4.
Libellula exusta (Say). Common; May 19 to July.
Libellula flavida Ramb. Rare; Fairyland, August 14.
Libellula incesta Hagen. Abundant; June 6 to September 17.
Libellula luctuosa Burm. Common; Bateman's, Fairyland ponds, June 16 to August 19.
Libellula pulchella Drury. Abundant; June 6 to September 8.
Libellula quadrimaculata Linn. Common; Walden, Goose, Bateman's, Strawberry Hill ponds, May 19 to August 19.
Libellula semifasciata Burm. Rare; John Brown farm, Strawberry Hill pond, June 9 to August 22.
Plathemis lydia (Drury). Common; May 27 to September 3.
Perithemis domitia var. **tenera** (Say). Common; Bateman's, John Brown farm ponds, July to September 5.

Erythemis simplicicollis (Say). Uncommon; Concord river, July to September 3.

Sympetrum costiferum (Hagen). Rare; Willow, Bateman's pond, August 15 to September 26.

Sympetrum rubicundulum (Say). Abundant; June 9 to September 30.

Sympetrum rubicundulum var. **obtrusum** (Hagen). Rare; September 5 to October 5.

Sympetrum semicinctum (Say). Common; Bateman's, Willow ponds, July 25 to September 18.

Sympetrum vicinum (Hagen). Common; August 14 to November 7.

Pachydiplax longipennis Burm. Common; Bateman's, Willow ponds, Fairhaven bay, July 28 to September 9.

Leucorrhinia frigida Hagen. Rare; Willow, Strawberry Hill ponds, June 8 to August 19.

Leucorrhinia glacialis Hagen. Uncommon; Fairyland, Willow, Walden, Goose, Strawberry Hill ponds, May 19 to June 21.

Leucorrhinia intacta Hagen. Common; May 17 to June 28.

Celithemis elisa (Hagen). Common; Willow, Walden ponds, Spencer brook, May 19 to June 18.

Celithemis eponina (Drury). Common; Bateman's, John Brown farm ponds, July to September 3.

Tramea carolina (Linn.). Rare; Strawberry Hill pond, June 8 to 11.

On the Early Stages of Catocala titania Dodge, and a Description of Three New Varieties of Catocala (Lep.).

By ERNST SCHWARZ, St. Louis, Missouri.

Catocala titania.

Ovum.—Glossy emerald green, changing in about ten days to liver brown; rather flat, concave ventrally; 42 to 48 ribs, many crossribs. Micropyle area rather large, granulated with many hexagonal elevations; micropyle slightly raised. Shortly before hatching the color changes to transparent blue.

Larva, Stage 1.—Head large; sides of head light brown. Body tapering to the sixth segment, from there enlarging; body color transparent bluish. Setae on first four segments only, whitish; three rows of dark brown tubercles on dorsal portion, each bearing a black spine. Ventral faintly pinkish with the usual blotches dark brown.

Stage 2.—Head smaller than in stage 1; brown. First and second segments a shade lighter than the rest of the body, which is a watery green color; two lateral lines a shade darker than body color. Dorsal

bears three rows of brownish tubercles, each set with a single spine; the saddle is faintly marked, with no elevation. Ventral as in stage 1.

Stage 3.—Head bilobed, ashen color; a black band below crest. Crest reddish, a black longitudinal dash in inverted "V" space. Body color faintly pinkish, thickly dotted with black, so that the general aspect is brownish gray. There is a faint middorsal line; the three rows of tubercles are tipped with orange, as is also the blunt elevation on saddle above third pair of prolegs. Spiracles black surrounded by the body color. Setae pinkish, short and are not present between segments nine and ten. Ventral light pinkish, with blotches of light blue.

Stage 4.—Head is body size; color and markings as in stage 3. Hump above third pair of prolegs is more prominent; setae pinkish, short and stout.

Stage 5.—Head strongly bilobed; posterior part brown, darkest at cleft; sides marbled with liver color; two black transverse bands in inverted "V" space. Crest orange, from which protrudes a tubercle of light orange set with a black spine. Body color greenish ashen sprinkled with many minute black dots; no distinct lines; all tubercles tipped with orange. Hump on saddle is prominent, brown tipped with reddish, and of a very fine texture; a second hump about half the size of the first and inclined toward it is on the same segment; dark brown, setae pinkish, stout. Ventral pinkish, with blotches of dark blue.

Pupa has no distinctive features from the *Catocala* type.

The larvae of *C. titania* can be collected until May 19, by bush beating night or day, as they do not leave the top of the tree for resting. When grown, the larva is easily recognized by the double horn above the third pair of prolegs; the posterior one is much the smaller, about half the size of the anterior.

The behavior of the larva of *C. titania* varies but little from that of other species of the genus. During the first stage they do not leave the margin of the leaf upon which they feed; in the second stage they rest on the lower surface of the midrib of the leaf; in the third stage they rest on a twig just a little larger in diameter than the body, and continue so during the remaining stages. They seem to be comfortable only when resting on a branch a little thicker than themselves, in either an upright or a horizontal position. Pupation occurs in most instances amid the thick foliage of a tree.

In every stage the caterpillar mimics the color of its rest-

ing-place; this gives the organism almost certain protection. In a previous article* on the habits of *C. titania,* I have mentioned that the imago rests in its similarly-colored environment in perfect confidence of safety and cannot easily be alarmed. Thus we see that throughout all the stages of its life cycle, this species is protectively colored.

Catocala titania Dodge, n. var. **distincta.**

Primaries.—Ground color whitish gray, sprinkled with brown spots of various shades; lines all prominent. T. a. line doubled, the anterior part faint, the posterior prominent throughout its entire length, but most conspicuous on costal region; median shade prominent, joins anteriorly the reniform. T. p. line very much in evidence, mostly so at "M" and sinus at vein 1. Reniform concolorous with subterminal line; subreniform closed, a shade lighter than ground color. Subterminal space dark brown, merging costally in the ground color; subterminal whitish and prominent; terminal line brownish but faint. In all other respects as in the type. Expanse 39 mm.

Types: One male and one female in collection of the author. *Paratype*: One male in collection of R. Lange. *Habitat*: St. Louis, Missouri.

In general aspect, this variety resembles *C. alabama,* except that the forewings of the former are much the narrower.

Catocala minuta Edwards, n. var. **eureka.**

♀.—Thorax silvery gray; body yellow, concolorous with hind wings; basal portion to b. h. line concolorous with thorax; from this point to subterminal line the primaries are blackish brown; all markings in this space very obscure; subterminal space very prominent, silvery white; terminal space light gray; lunula blackish, centered with silvery dots; fringes concolorous with terminal space. Expanse 38 mm.

♂.—The terminal space not so prominent as in the female; in all other respects as in the female.

Habitat: St. Louis, Missouri.

Types: One male and one female in author's collection. *Paratypes*: One male and one female in collection of Fred. T. Naumann, of St. Louis, Mo. The females and one male bred by Mr. F. Naumann; the other male taken by the writer.

Eureka is to *minuta* what the variety *gisela* is to *micronympha,* and *scintillans* is to *innubens.*

* Ent. News, *27*: 68.

Catocala minuta Edwards, n. var. **obliterata.**

♂ and ♀.—Forewings so heavily overlaid with blackish scales as almost to obscure the ground color and markings, except the ring surrounding the black reniform center, which is light brown, and subterminal line at costa, which is also light brown. Hind wings as in *minuta,* with the exception of the absence of the yellow apical patch. Expanse 40 m.m.

Habitat: St. Louis, Missouri.

Types: Collection of the author.

This variety bears the same relation to *minuta* as *agatha* to *unijuga,* and *lydia* to *faustina,* and *somnus* to *luciana.*

A New Genus of Bees from Peru (Hym.).

By T. D. A. Cockerell, Boulder, Colorado.

Among the Old World Halictine bees is a very singular genus, *Thrinchostoma* of Saussure; first described from Madagascar, but now known to be widely distributed in tropical Africa and Asia.* The species have the mouth region prolonged and more or less snout-like, the malar space large. The wings are hairy, and in the males there is a patch of black hair situated on the second transverso-cubital nervure. There is a hyaline fold or spurious vein extending from the base of the stigma obliquely across the first submarginal cell and across the lower part of the second. The abdomen is subclavate, especially in the males. The tongue is long and slender.

At Huascaray, Peru, September 21, 1911, Prof. C. H. T. Townsend collected a very peculiar bee, having the aspect of a male *Thrinchostoma,* but with slender simple hind legs, and no patch of black hair on the second transverso-cubital nervure. Closer inspection shows it to be a female, and as it is wholly without pollen-collecting apparatus it must be a parasitic insect. It is thus quite distinct from *Thrinchostoma* and it is an interesting question whether it represents an isolated group of an old Thrinchostomine stock, or an independent evolution of parallel characteristics. It represents in any event a genus new to our classification, though it has in fact been provided

* See Canadian Entomologist, Feb., 1913, p. 35; July, 1915, p. 213. Ann. Mag. Nat. Hist., Dec., 1914, p. 452.

with a generic name. Vachal, in Miscellanea Entomologica, xii (1904), p. 127, described a species *Halictus chlerogas,* from a female taken at Callanga, Peru. It is considerably smaller than our species, and metallic green but it is evidently congeneric. Vachal, struck by its peculiar characters, surmises that it may represent a new parasitic genus and adds that if this should prove to be the case the genus might be named *Chlerogas,* and the species *C. latitans.* According to the rules, however, it will be *Chlerogas chlerogas* (Vachal).

CHLEROGAS Vachal.

Halictine bees without pollen-collecting apparatus in the female, the abdomen of this sex clavate, truncate and hirsute at apex, without any caudal rima; hind legs of female long and slender, the tarsus much longer than tibia or femur; no hind patella; hind spur with three long teeth; head prolonged beyond the eyes, snout-like, malar space very large; inner orbital margins deeply emarginate; ocelli ordinary; antennae long for a female; scutellum binodose; wings conspicuously hairy; basal nervure falling short of transverso-median; second submarginal cell nearly square, first recurrent nervure meeting second transverso-cubital on entering extreme base of the large third submarginal cell; stigma large. Type *C. chlerogas,* but also includes:

Chlerogas hirsutipennis n. sp.

♀.—Length about 12 mm., anterior wing nearly 11; face prolonged about 1.3 mm. beyond eyes; head and thorax black, not metallic; labrum, mandibles and apical margin of clypeus dull yellow; clypeus dull with sparse very feeble punctures; antennae black, flagellum and apex of scape obscure, reddish beneath; face, vertex, mesothorax and scutellum with thin black hair; hair of metathorax thin, erect, ochreous; mesothorax dull, without evident punctures; area of metathorax with extremely fine oblique striae; posterior truncation of metathorax long, oblique, narrow, with a median sulcus, only the lower end defined on each side by a carina; tegulae dark reddish; wings dusky, stigma honey-color, nervures dilute fuscous; legs bright ferruginous; abdomen piceous above, dull, without bands, base of second segment pale reddish; apex with coarse black hair; second and third ventral segments light ferruginous.

Huascaray, Peru; type in U. S. Nat. Museum.

Notes on the Genus Dicranoptycha Osten Sacken (Tipulidae, Diptera).

By Charles P. Alexander, Lawrence, Kansas.

The genus *Dicranoptycha* was erected by Osten Sacken in 1859 to include four closely allied crane-flies from the eastern states. In 1910, Coquillett designated the first of these four species, *D. germana*, as the genotype. Later on, in the *Monographs* (1869), Osten Sacken relegated *D. sororcula* to the synonymy of *D. sobrina*, where it still remains. Besides the four valid Nearctic species, there are two European species of the genus. The Oriental *D. signaticollis* v.d.W. is undoubtedly a *Libnotes* rather than a *Dicranoptycha*. The known species of the genus are all very closely related and are separable only on slight differences of color and structure.

Of the American species, *D. germana* O. S., the largest form, is characteristic of the Canadian life-zone and its range rarely overlaps those of the other species. The three remaining forms, together with the two species described in this paper, are characteristic of the Austral and lower Transitional life-zones. They frequent open woods, often but not necessarily near water, and several species may be found flying together. Thus at Plummer's Island, Maryland, in July, 1915, Mr. McAtee and the writer found *D. sobrina* and *D. winnemana* commonly. At Lawrence, Kansas, in July and August, three species fly commonly at the same time, *D. winnemana, D. minima* and *D. tigrina*. These species appear on the wing in about the order given, *D. winnemana* emerging first in early June, *D. minima* in early July and *D. tigrina* in mid-July, though all three species continue on the wing throughout August and most of September. They frequent the open Austral woodlands such as North Hollow on the University Campus and in such situations may be found resting on the leaves of tall herbage and low shrubbery. They are almost invariably the only Limnobiinae occurring but fly with a number of species of *Tipula* which have a much shorter flight period (*Tipula dietziana, T. mingwe, T. morrisoni, T. unimaculata, T. umbrosa, T. flavoumbrosa, T. flavibasis*, etc.).

The general distribution of the American species has been indicated by the writer in an earlier paper (Proc. Acad. Nat. Sci., Phila., 1916, pp. 496, 497). All of the species are comparatively restricted in distribution excepting *D. sobrina*. In the *Monographs* (1869, p. 117) Osten Sacken stated that the Californian specimens represented a new species which he did not characterize. In his *Western Diptera* (1877, pp. 197, 198),

however, he indicated that the species was very probably *D. sobrina*. I have examined a great number of specimens from the western states and must state that I cannot distinguish the material from typical eastern *sobrina* and so must consider this species as being trans-continental, the widest distribution for any species of the genus. Specimens from New Mexico break this rather discontinuous range of *sobrina* and the species may be looked for in Texas and other intermediate states. *D. nigripes* is still known only from the unique type taken in Georgia. Specimens that were distributed by me under this name are herein described as a new species, *D. minima*. *D. winnemana*, described from Plummer's Island, Maryland, ranges from Maryland and Georgia westward to Kansas. The new species described below have as yet been found only in scattered localities in Douglas County, Kansas, but unquestionably have a wide range in this section.

The larvae of the species that I have reared, *D. winnemana* and *D. minima*, are very similar to one another and are very characteristic in appearance. They are unusually elongate, slender, the body terete; the skin very thin, glassy, entirely transparent, and glabrous so that the head-capsule and contents of the alimentary tract show through as clearly as through a very thin glass. The head-capsule is of the massive Limnobiine type and is readily told from all other crane-flies with the exception of *Epiphragma* by the three-toothed mentum. The spiracular-disk is comparatively small, surrounded by four small, slender, pointed lobes, two being lateral and two ventral in position. The inner face of these lobes and the disk itself are variously marked with black lines. The anal swelling is fleshy and highly protuberant. The larvae live in the moist or rather dry earth where they occur beneath the surface layer of leaf-mold and other debris. The pupa is likewise very characteristic since it apparently lacks pronotal breathing horns, these being sessile as in the higher Diptera. The pupa lives encased in a small, oval case of earth. The above observations were made on material reared by my wife, Mabel M. Alexander. Detailed observations on the immature stages of this interesting genus are given in another paper.

A Key to the American species of Dicranoptycha.

1. Wings with a strong reddish-brown or fulvous tinge; *Rs* notably longer than cell *1st M2*; Canadian life-zone. (Northeastern United States).....*germana* O. S.
   Wings not strongly fulvous; *Rs* approximately as long as cell *1st M2*; Austral and Transitional life-zones.....2
2. Tips of the femora conspicuously black; abdominal tergites uniformly light brown or yellow.....3

Tips of the femora not black; abdominal tergites banded or at least the seventh segment blackish.....4

3. Size large (male, length, about 10 mm.); wings brownish yellow; male hypopygium with the gonapophyses acicular, prominent. (Georgia). .....*nigripes* O. S.

Size small (male, length, under 8 mm.); wings brown; male hypopygium with the gonapophyses small, not projecting. (Kansas). .... **minima,** sp. n.

4. Coloration yellow, the wings deep yellowish. (Eastern United States). .....*winnemana* Alex.

Coloration brown or gray; wings pale brownish or grayish. 5

5. Abdominal tergites uniformly dark brown or only the seventh segment darker; male hypopygium with the gonapophyses not acicular or projecting. (United States).....*sobrina* O. S.

Abdominal tergites banded, tigrine in appearance, the apical third of each segment pale; male hypopygium with the gonapophyses acicular, prominent. (Kansas). ..... **tigrina,** sp. n.

Dicranoptycha tigrina, sp. n.

♂.—Length, 9 mm.; wing, 9.8-10 mm. ♀.—Length, 10 mm.; wing, 9.3-9.5 mm.

Rostrum reddish. Palpi black. Antennae with the scape reddish yellow, the flagellum black. Head grayish brown, the vertex narrow. Mesonotum dark brown with a sparse brownish yellow pollen and without distinct stripes. Pleura clear gray becoming more yellowish below. Halteres pale. Legs with the coxae brownish yellow, the anterior coxae darker brown; femora brownish yellow, the tips of the femora darker brown; tibiae and tarsi brown. Wings with a strong gray tinge, highly iridescent; veins dark brown. Venation: *Sc* moderately elongated, extending to about midlength of the basal deflection of *R*4+5; *Rs* moderately elongated, about as long as the long cell 1*st M*2 and half again as long as the deflection of *R*4+5; basal deflection of *Cu*1 inserted at or before one-third the length of cell 1*st M*2.

Abdominal tergites dark brown, the apical third of each segment more yellowish, producing a banded or tigrine appearance; segment seven dark brownish black; hypopygium reddish yellow. Sternites similar but the pale posterior margins to the segments are still broader. Male hypopygium with the dorsal pleural appendage bent at a right angle before midlength, the long apical point provided with numerous setae; ventral pleural appendage a short, broad, flattened blade, with a short curved tip and the inner margin with 8 or 9 acute serrations. Gonapophyses long, acicular, projecting conspicuously between the pleurites.

Habitat: Kansas.

Holotype, ♂, Lawrence, Douglas County, Kansas, alt. 900 ft., July 16, 1918. *Allotopotype,* ♀. *Paratopotypes,* 50 ♂ ♀, July 16-30, 1918.

This species is apparently close to *D. nigripes* O. S. in the structure of the male hypopygium but the coloration of the wings and body are very different.

Dicranoptycha minima, sp. n.

♂.—Length, 6.7-7.2 mm.; wing, 6.5-7.8 mm. ♀.—Length, about 6.5 mm.; wing, 7-7.2 mm.

Rostrum brownish yellow. Palpi black. Antennae with the scape

bright yellow, the flagellum brownish black. Head brown; vertex rather broad.

Pronotum grayish brown. Mesonotum light brown without stripes; pseudosutural foveae distinct, black. Dorsal pleurites indistinctly grayish, the ventral pleurites yellow. Halteres brown. Legs with the coxae and trochanters yellow; femora dull yellow, the tips narrowly and abruptly blackened; tibiae yellowish brown, the extreme bases and tips a little darkened; tarsi brown, the metatarsi more yellowish. Wings with a strong brownish tinge, more yellowish basally and along the costa; veins dark brown, subcosta yellow. Venation about as in *D. tigrina*.

Abdomen yellowish brown without distinct darker markings; tergite seven concolorous with the other abdominal segments. Hypopygium yellowish. Male hypopygium with the dorsal pleural appendage flattened, very broad, the surface covered with setae. The narrow ventral appendage is produced into a long slender apical point. Gonapophyses short, not acicular or projecting conspicuously between the pleurites.

Habitat: Kansas.

Holotype, ♂, Lawrence, Douglas County, Kansas, alt. 900 ft., July 16, 1918. *Allotopotype*, ♀. *Paratopotypes*, 50 ♂ ♀.

The types of the new species are in the collection of the author. Paratypes have been placed in the leading collections of the country.

Cordulegaster dorsalis (Odonata) as an Enemy of Trout.

Mr. Frank Springer writes from the Abbott Ranch, Rito de los Frijoles, New Mexico, Sept. 1, as follows:

"I am sending you some beasties, that I should like to know a little more about. They are highly predaceous devils, and I first discovered them in the act of seizing some of a lot of young trout which I was placing in the brook here. The bug lies buried in mud or sand, in shallow parts of the stream where the current is not very swift, with only his eyes projecting. When a little fish (about an inch long) comes wiggling along close enough over the bug, he snaps, projecting his formidable mandibles [lateral labial lobes] and the shovel-like part below them for quite a distance to the front, and catches the fish by his wiggling tail. By simulating the wiggling motion of a fish with a knife-blade, I could induce the bug to snap at it, and thus saw the motion several times. . . . . I found the creatures quite numerous in the shallow, quieter waters where I was planting the young fry, and apparently they constitute a rather serious menace to the stocking of the stream, as they infest the shallow places, while the deeper water is dangerous on account of the older fish. I find that the trout eat these bugs to some extent, as in several instances they were contained in the stomach, and they are readily taken when offered as bait."

Specimens sent agree in all particulars with *Cordulegaster dorsalis* Hagen, as described and figured by Needham.—T. D. A. Cockerell, Boulder, Colorado.

ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., JANUARY, 1919.

The News for 1919.

Whether the hopes for the betterment of Entomology expressed in our editorial for November last are any farther toward realization may well be doubted. In one respect, affecting the NEWS very strongly, it is certain that conditions are worse than at any time in the past. We regret to say that increased charges for labor within the last few months, unaccompanied by any decrease in other expenses, positively compel us to reduce the number of pages which we are able to publish each month and to forego all illustrations in plate or text, except where authors bear their cost. Even with these curtailments we look forward to a considerable deficit at the end of 1919. We surely owe this statement of our outlook for the new year to our many friends and contributors when they open the pages of the present number and note its smaller size. It is unnecessary to say that they can not regret this condition more than do the editors and committees of the NEWS. Whenever financial matters improve, we shall respond at the earliest possible moment by restoring this journal to its former thickness.

Bittacomorpha clavipes (Dipt.).

On Sept. 1, as I was crossing a road in Boulder, Colorado, I saw a strange apparition. What seemed to be a series of black and white specks, symmetrically arranged, was passing rapidly through the air. I realized at once that I was looking at *Bittacomorpha clavipes,* which I had never before met with in my years of collecting at Boulder. Having no net, I could only knock it down with my hat, breaking off the strange and beautiful legs. This is not the first capture of *B. clavipes* in Colorado, as Mr. C. P. Alexander informs me that Dr. F. H. Snow took it in Manitou Park, in August, years ago. The group is an ancient one, now represented by comparatively few species, scattered over the earth. A species of the same genus (*B. miocenica* Ckll., 1910) has been found fossil in the miocene shales at Florissant.—T. D. COCKERELL, Boulder, Colorado.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

A One Year Life Cycle for Saperda candida Fab. Reared in an Apple (Col.).

In Bulletin No. 156 of the Arkansas Agricultural Experiment Station the writer called attention to the fact that it seemed quite probable that *Saperda candida* could be reared through all of its stages in the fruit of apple. At the time of the writing of the above mentioned bulletin the writer had in rearing two larvae which were at that time nearly one year old. The eggs from which these larvae had hatched had been deposited in an apple by a beetle during the season of 1917.

The eggs hatched in this apple, and the larvae were allowed to burrow around in the fruit until it began to decay, after which each larva was transferred to a fresh fruit. The borers were transferred to fresh fruits whenever the condition of the latter made it necessary to do so. During the winter the apple containing the insects was kept in the laboratory so that temperature conditions were favorable for them all the year.

Reared in this way, one larva pupated and emerged as an adult in the summer of 1918, which was just one year after the egg from which it hatched, had been deposited. During the course of their development larvae were fed upon all sizes of apples, ranging from young green fruits not much over one and one-half inches in diameter to fully ripened and matured fruits. Part of the time the borers fed upon soft and rotten fruits. The larva which matured in the fruit had probably fed upon six different apples during the course of its development.

It is possible, in fact quite likely, that the unfavorable conditions under which the larvae were reared, were responsible for the development of one of them in one year. The beetle which developed from this larva was only about 15 mm. long, whereas a normal beetle is usually from 18 to 20 mm. in length. The second larva died at about the time when the first one pupated. It seems most likely that the second larva died because of the condition of the apple at the time of its death. The latter was in the same soft and rotten condition as the apple in which the first larva pupated.

In view of the rapid and apparently normal development of the larvae up until winter of their first year, it seems quite likely that they would attain their normal development in the fruit if they were given fresh material from time to time so that the medium in which they were feeding would not become soft, gelatinous and even liquid as was the case many times in the apples in which we reared our larvae.—Geo. G. Becker, Arkansas Agricultural Experiment Station, Fayetteville, Arkansas.

Botanical Abstracts.

Under this title there has appeared No. 1, Vol. I, dated September, 1918, of "a monthly serial furnishing abstracts and citations of publications in the international field of botany in its broadest sense. . . . The Board of Control of Botanical Abstracts has charge of the publication. With the beginning of the year 1919, the membership of the Board of Control will be representative of the [13] various American botanical societies. At that time each society will be represented by two members, one elected for a period of two years and the other for a period of four years. After January, 1919, each society will elect a member for a period of four years, at intervals of two years, to replace its representative who automatically retires." It is planned to issue two volumes of 300 pages each within one year, at $6.00 for the two volumes. This first number bears on its cover the names of an editor-in-chief and 15 editors for different divisions of botany with others still to be announced. As Entomology is so closely linked with Botany this magazine will be very useful to those cultivating the former. Indeed so "broad" is the "sense" of botany interpreted that we find in this number summaries of articles whose content is zoological or entomological and not botanical, e. g., "Inheritance in Orthoptera," "A preliminary report on some genetic experiments concerning evolution" [largely concerned with the gypsy moth], "Studies in inheritance in the hybrid Philosamia (Attacus) ricini (Boisd.) ♂ Philosamia cynthia (Drury) ♀." The publishers are the Williams and Wilkins Co. of Baltimore.

The Larval Habitat of Chalcomyia aerea Loew. (Diptera, Syrphidae).

On March 4 Dr. R. D. Glasgow brought to me a number of larvae of the above species which he had found in a dead basswood log at Augerville Woods near Urbana. Along with these were several larvae of the tipulid *Xiphura fumipennis* O. S., and one of *Xylota fraudulosa* Loew. On March 13 the latter produced an imago, and on March 14 two males of *aerea* appeared.

The only record of the larval habitat of the latter is that published by Metcalf in his "Syrphidae of Ohio." His record states that a pupa was found under the bark of a log lying close to a river and whether the larva had gone there to pupate or had lived in the log was left in doubt. The larvae very closely resemble those of *Eristalis*, possessing a long slender tail-like caudal respiratory appendage, but the log in which the specimens before me were found was not supersaturated and as *Xylota fraudulosa* does not possess a long caudal appendage it is difficult to explain the relation between the structure of *Chalcomyia* larva and its habitat.—J. R. Malloch, Urbana, Illinois.

A Change of Names (Coleoptera).

Thanks to the courtesy of Mr. C. W. Leng, my attention has been called to a number of pre-occupied names used by me in recent descriptive work. These, with the new names now proposed, are as follows:

For *Bledius dissimilis* Fall (Trans. Am. Ent. Soc. 1910, p. 107)
Substitute *B. philadelphicus* new name.

For *Bledius fratellus* Fall (loc. cit. p. 112)
Substitute *B. transitus* new name.

For *Pachybrachys instabilis* Fall (Trans. Am. Ent. Soc. 1915, p. 471)
Substitute *P. hector* new name.

H. C. Fall, Tyngsboro, Massachusetts.

Note on the Vinegarone (Arach., Pedipalpi).

Professor Comstock, in his Spider Book, concerning the giant whip-tail scorpion (*Mastigoproctus giganteus*), writes, "In some parts of the South they bear the local name *grampus* and are greatly feared on account of their supposed venomous powers; but it is probable that there is no foundation for this fear; for although it has been stated often that their bites are poisonous, I can find no direct evidence that this is true, and no poison glands have been found in this order."

Many years ago, when the late Dr. George Marx was connected with the United States Department of Agriculture, he kept one or more specimens of this dangerous looking creature in a glass jar in the laboratory of the Division of Entomology and made a careful study of its possibility for harm, but both experimentally and by dissection failed to find any basis for the common superstition. For a long time it was a standing joke in the Division of Entomology to test the nerves of occasional visitors by inviting them to handle one of these specimens. I remember that no less a person than that excellent entomologist, John B. Smith, refused absolutely to touch one, while those of us who knew handled them with impunity.

As is well known, the name *vinegarone* in the southern United States was originally given by French settlers from the French West Indies, and arose from the vinegar-like, intensely acid secretion which the whip-tail scorpion exudes when approached.

An interesting story was told me the other night at the Biological Society of Washington by General T. E. Wilcox, to the effect that in 1877 at Camp Supply, Indian Territory, a blacksmith crushed a *vinegarone* on his upper left breast. Blisters resulted which extended over the whole breast, and the glands were involved to some extent. He stayed away from work for a week, and General Wilcox, who at that time was a surgeon in the Army, treated him. Of course there was no sting, and the blisters resulted simply from the acid secretion.—L. O. Howard, U. S. Bureau of Entomology, Washington, D. C.

Eumerus strigatus Fall., the Lunate Onion Fly, in New Jersey (Dip.).

On February 6, 1918, an adult of this European species, kindly identified by Dr. Bequaert, was taken in a greenhouse at Rutherford, New Jersey. This is the first definite record of its occurrence in New Jersey, but its presence was suspected several years ago in connection with iris roots injured by *Macronoctua onusta* Grote (Psyche, June, 1915, p. 106). Felt (27th Rept. State Ent., N. Y., p. 119) records it from Saratoga Springs, New York, and states that Dr. Chittenden informed him that it had been bred from bulbs received from Connecticut and Texas. Its presence in New Jersey at Rutherford is not surprising in view of the fact that huge quantities of Holland bulbs are consigned to this locality every year. In "Ziekten en Beschadigingen der Tuinbouwgewassen," by Van Den Broek en Schenk, it is listed as a pest of narcissus in Holland and it is stated that it and *Merodon equestris* constitute the most important insect enemies of that plant.

According to the Dutch authors, the flies appear in May and June and the eggs are evidently laid on the bases of the leaves. The larvae enter the nose of the bulb, from 10 to 30 being found in a single one. When full grown they are from 7 to 9 mm. in length. The maggots feed in the interior, which soon becomes slimy and decayed and the destruction appears to be more complete and rapid than that caused by *Merodon equestris* larvae with which they are sometimes associated in the same bulb. The puparia are usually found in the outside layers, or at the nose of the bulb, during August and it appears that a second brood of flies, of which little is known, appears in September and October. On bright, sunny days the adults can be seen flying low over the narcissus plants. It is also recorded as attacking hyacinths and onions. In Holland the destruction of infested bulbs appears to be the common method of control.

Verrall (British Flies, 8, 615, 1901) states that it is recorded from all North and Middle Europe and Italy, and Walker (1851, Insecta Britannica, Diptera, I, 241-42) records it as being generally distributed in Great Britain and states that the larvae of the genus feed on bulbous roots. Considering the fact that it was first noted in the United States in 1906 (Chittenden), it is strange that more records of it have not turned up. On account of its reputation as an onion pest in Europe its presence in this country should be of interest, especially in such states as Ohio, New York, Texas, California, Indiana, Illinois, Louisiana, Massachusetts, Kentucky and New Jersey, which are the ten main onion States in the order of their importance.—H. B. Weiss and A. S. Nicolay, New Brunswick, New Jersey.

A Remarkable Case of Longevity in Insects (Hem., Hom.)

The genus *Margarodes* (Hemiptera, Coccidae) contains certain curious species in which the first stage larva possesses legs and antennae, these appendages being lost in the intermediate stages and reappearing in the adult. All of the described species are subterranean in habitat and in all the appendageless, intermediate stages are enclosed within a tough, hard cyst formed from the secretions of certain dermal glands of the insect. The details of the life histories of most of the species are unknown but one species, *M. vitium* Giard, has received a considerable amount of attention.

This species is a native of Chile and Venezuela, where it feeds upon roots of grapes and at times becomes somewhat of a pest. It has been the subject of a number of more or less extended papers and in one of these Mayet[1] has recorded the astonishing fact that adults were observed by him to issue from cysts that had been kept for a period of seven years, during which time the insects had taken no food. The emergence of the adult was induced by immersing the cysts in water for a considerable period. Apparently this ability to lie dormant for long periods is an adaptation to the peculiarities of the climate of the insect's native land, the adult insects emerging normally during the rainy season. Some one has said that in certain parts of Chile it rains but once in seven years and sometimes skips this.

The Stanford collection of Coccidae contains several cysts of this species, collected in Chile by Lataste and received by the University from Professor Cockerell in 1902. In December of 1917 several of these cysts were opened by the present writer, the enclosed individuals being found dead and shriveled as was to be expected. However, the insect removed from one cyst was so soft and white as to induce the belief that it must still be alive. There being no appendages the movement of which might reveal the presence of life, histological preparations were made from the specimen.

These preparations have been examined by competent authorities, including Professors F. M. McFarland and Harold Heath, all of whom agree that the specimen must have been alive at the time it was removed from the cyst or at the most but a very short time before. The tissues appear in all respects to be perfectly normal, the nuclei of the hypodermal cells and of the walls of the alimentary canal not differing in any recognizable degree from those of the same organs seen in preparations of other Coccids known to have been alive at the time of fixation. Astonishing as this may seem, there is no reasonable explanation other than that the insect was indeed alive.

Correspondence with Professor Cockerell has elicited the information that the material from which this specimen was taken came into his hands in 1899 or 1900 or perhaps earlier. When they were collected is not known, nor, of course, is it known how old they were when they were collected. *There is, however, the definite and indisputable record that this insect remained alive for at least 17 years without food.*

It would be most interesting to know whether the insect could still have transformed into an adult and issued from the cyst under the stimulus of moisture. Unfortunately all the remaining cysts contain only specimens that are unmistakably dead and shriveled and the opportunity is past.—G. F. Ferris, Stanford University, California.

[1]Mayet, V. Note sur Margarodes vitium Giard. Bull. Soc. Ent. France (7), 6, p. 50. 1896.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new species are all grouped at the end of each Order of which they treat. Unless mentioned in the title, the number of the new species occurring north of Mexico is given at end of title, within brackets.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

4—Canadian Entomologist, London, Can. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **13**—Journal of Entomology and Zoology, Claremont, Calif. **16**—The Lepidopterist, Salem, Mass. **17**—Lepidoptera, Boston, Mass. **18**—Ottawa Naturalist, Ottawa, Can. **51**—Archiv fur Mikroskopische Anatomie, Bonn. **52**—Zoologischer Anzeiger, Leipsic. **53**—Nature Study Review, Ithaca, N. Y. **54**—Proceedings of the Biological Society of Washington, D. C. **55**—Bulletin de la Societe Vaudoise des Sciences Naturelles, Lausanne, Switzerl. **56**—Proceedings of the Indiana Academy of Sciences, Indianapolis. **57**—Biologisches Zentralblatt, Leipzig. **58**—New York State Museum Bulletin, Albany. **59**—Journal of Agricultural Research, Washington. **60**—Maine Agricultural Experiment Station, Orono. **68**—Science, Lancaster, Pa.

GENERAL. Dewitz, J.—Ueber kunstliche aufhebung des spinnens der arthropoden. **52,** l, 27-30. **Escherich, K.**—Zeitschrift fur angewandte entomologie. Band iv, Heft i, 188 pp. **Felt, E. P.**—Key to American insect galls. **58,** 200, 310 pp. **Harris, H. W.**—Field notes. **17,** ii, 86.

GENETICS. Cromwell, H.—Further experiments with the mutant, scarlet, from Drosophila repleta. **56,** 1917, 287-93. **Zeleny, C.**—Germinal changes in the bar-eyed race of Drosophila during the course of selection for facet number. **56,** 1917, 73-7.

ARACHNIDA AND MYRIAPODA. Pillichody, A.—Photographie d'une toile d'araignee. **55,** lii, 157-60.

Chamberlin, R. V.—Two new diplopods from Louisiana. **4,** 1918, 361-3.

NEUROPTERA. Ballowitz, E.—Ueber die samenkorper der Libellen. 1. Die spermien und spermiozeugmen der Aeschniden. **51,** Abt. 1, xc, 169-85. **Darsie, D. L.**—A list of Odonata chiefly from Laguna beach. **13,** x, 79.

Walker, E. M.—On the American representatives of Somatochlora arctica with descriptions of two n. sps. **4,** 1918, 365-75.

ORTHOPTERA. Caudell, A. N.—Zorotypus hubbardi, a n. sp. of the order Zoraptera from U. S. **4,** 1918, 375-81. Two n. sps. of the blattid genus Arenivaga. **10,** xx, 154-7.

HEMIPTERA. Riley, C. F. C.—Food of aquatic Hemiptera. **68,** xlviii, 545-7. **Jones & Gillette**—Life history of Pemphigus populi-transversus. **59,** xiv, 577-94. **McAtee, W. L.**—Genera of the Eupterygidae (Jassoidea). **54,** xxxi, 109-24.

McAtee, W. L.—Notes on Nova Scotian Eupteryid leaf-hoppers, including descriptions of two n. sps. **4,** 1918, 360-1.

LEPIDOPTERA. Acker, C. T.—The study of moths and butterflies as a recreation. **53,** xiv, 337-43. **Ainslie, C. N.**—A note on the economic importance of Samia cecropia. **10,** xx, 150-2. **Barnes & McDunnough**—Illustrations of the N. Am. sps. of the genus Catocala. (Mem. Am. Mus. N. H., n. s., iii, pt. 1, 47 pp.) **Dognin, P.**—Heteroceres nouveaux de l'Amerique du Sud. Fasc. xiv, 27 pp. **Ehrmann, G. A.**—New exotic [neotropical] papilios. **17,** ii, 82-4. **Hiser, O. F. & J. S.**—Life history of Catocala nuptialis. **16,** ii, 66-9. **Prout. L. B.**—New L. in the Joicey collection [S. Am]. **11,** ii, 412-18. **Rowley, R. R.**—A long-fasting lepidopter. **4,** 1918, 363-4.

DIPTERA. Greene, C. T.—Note on the habits of Pegomyia affinis and other anthomyid genera. **10,** xx, 160. **Lindner, H.**—Ueber die mundwerkzeuge einiger dipteren und ihre beziehungen zur ernahrungsweise. **52,** l, 19-27.

Alexander, C. P.—New [5] nearctic crane flies. **4,** 1918, 381-6.

COLEOPTERA. Hudson, C. H.—Concerted flashing of fireflies. **68,** xlviii, 573-5.

Chapin, E. A.—A new Hydnocera (Cleridae). **54,** xxxi. 107-8. **Swaine, J. M.**—Canadian bark-beetles. Part 2. [8 new]. (Canada. Dept. Agr., Ent. Branch. Bul. 14.). **Woods, W. C.**—The biology of Maine species of Altica [3 new]. **60,** Bul. 273.

HYMENOPTERA. Cockerell, T. D. A.—Descriptions and records of bees [Neotropical]. **11,** ii. 418-25. **Cushman, R. A.**—Notes on the cocoon spinning habits of two sps. of Braconids. **10,** xx. 133-6. **Henning, H.**—Zur ameisenpsychologie. Ein kritische erorterung uber die grundlagen der tierpsychologie. **57,** xxxviii. 208-20. **Rohwer, S. A.**—North American species of the sawfly genus Laurentia. **10,** xx. 157-9. **Sladen, F. W. L.**—The genus Vespa in Canada. **18,** xxxii, 71-72. **White, G. F.**—Note on the muscular coat of the ventriculus of the honey bee. **10,** xx, 152-4.

Gahan, A. B.—A synopsis of the species belonging to the chalcidoid genus Rileya [4 new]. **10,** xx, 136-50.

The NEWS for December, 1918, was mailed at the Philadelphia Post Office on December 14, 1918.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted for Cash—Lowest insects of all families, preserved in fluid, for phylogenetic study. G. C. Crampton, Amherst, Mass.

Wanted—South American and Indian macrolepidoptera in exchange for Australian specimens in any order. (Rev.) H. S. Bodley, The Vicarage, Birchip, Victoria, Australia.

Wanted—A series of volumes of the Candian Entomologist including vols. 29, 30 and 31; also Ontario Entomological Society Reports, Nos. 2, 3, 4, 8 and 9. State condition and price wanted. M. H. Ruhmann, Vernon, British Columbia.

Wanted—Canadian Entomologist. Part xx of H. F. Wickham's Coleoptera of Canada or complete number of Can. Ent., xxix, Feb., 1897, containing same. Also Farmers' Bulletins 189 and 191. Geo. M. Greene, 2534 W. Columbia Ave., Philadelphia, Pa.

Catocalae—For exchange; perfect specimens of *Faustina* var. *zillah, similis, gracilis.* Desire other *Catocalae.*—Ernest Baylis, 5011 Saul Street, Phila., Pa.

Incisalia polios for Exchange—Want *I. irus, augustus, niphon, T. damon* and *Thecla* from South and West. Also have *L. pontiac* to exchange for "Skippers." H. M. Bower, 702 First National Bank Bldg., Milwaukee, Wis.

Wanted to Exchange—I wish to exchange Actias luna cocoons for Lepidoptera. Carl Selinger, 4419 Dover St., Chicago, Ill.

Will pay cash for Pars 39 and 52: Coleopterorum Catalogus, of Junk. Jos. O. Beaulne, 3653 Notre Dame East, Montreal, Canada.

Wanted—Living and preserved material of Tabanid and other dipterous larvae and pupae. Tabanid larvae obtained by sifting soil at edge of ponds and streams. Packing in wet material, not water, each larva separate, in glass vials or tins. To preserve use boiling water, then alcohol. Exchange: Insects of all orders, or cash. Werner Marchand, 10 Dickinson St., Princeton, N. J.

Live Pupae of Sph. chersis, drupiferarum, luscitiosa, eremitus, Phil. achemon, Deid. inscripta, Paon. excaecatus, myops, Eac. imperialis, Cres. juglandis and others for exchange. Wanted—N. A. and Exotic Lepidoptera. Will pay cash for N. A. Catocalas. Herman J. Erb, 925 Hatch Ave., Woodhaven, Lg. Isl., New York.

Wanted for Cash or Exchange—Exotic Lycaenidae and some species from the U. S. Send me your offerta and lowest cash price. Paul N. Musgrave, 130 Oak Street, Clarksburg, W. Va.

Wanted—Syrphidae, Bombylidae and Coccinellidae from all parts of the world in exchange; also Florida insects for those from other regions. P. W. Fattig, Box 315, Gainesville, Fla.

Wanted—Phanaeus, Moneilema and Cleridae for cash or liberal exchange in rarities. Please send your lists to F. J. Psota, 316 So. Mozart St., Chicago.

Diurnal Lepidoptera—I have many desirable western species to exchange. Send lists of offerta. Dr. John Comstock, Southwest Museum, Marmion Way and Ave. 46, Los Angeles, Calif.

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I have sold my 1918 stock of Catocala ova to Mr. T. D. Mayfield, 50 Columbia Street, Newark, New Jersey.

TOM SPAULDING,
R. F. D. No. 1. Box 274, Provo, Utah.

List of Coleoptera of North America

By CHARLES W. LENG

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